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*A case-study of changing facilitation practice in a project-organized and problem-based learning environment*

Spliid, Claus Christian Monrad

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# From directive to inquiry-based facilitation of engineering student-groups' projects: A case-study of changing facilitation practice in a project-organized and problem-based learning environment

Claus Monrad Spliid

Teaching associate professor

Aalborg Centre for Problem Based Learning in Engineering, Science and Sustainability  
under the auspices of UNESCO

Aalborg University, Denmark

Facilitation of engineering student-groups' projects at Aalborg University is predominantly characterized by directive approaches in response to groups' request for technical assistance, while supportive approaches are limited to levels of approval. The facilitators vary their directive approaches to a considerably higher degree than they vary their supportive approaches. The logic behind this choice is explained by facilitators as a need to (1) be time-efficient; (2) guide students towards efficient development of effective solutions; and (3) meet students at their level of technical proficiency. This value-driven approach evidently overrules alternative (theory-based) approaches and pedagogically focused dialogue with facilitators (irregardless of level of experience) reveals a strong case for maintaining a default practice that consistently has proven project results ranging from acceptable to excellent – when students have made the necessary effort.

As the focus (from both students and facilitator) implicitly is on the project rather than explicitly on the students' actual learning the described logic is congruent, although explanation (3) is not always the case. However, when student learning is in focus the logic is incongruent.

This case study concludes that disclosure of such incongruence between stated and actual intentions is necessary. Convinced facilitators reconsidered their default approach and tested an inquiring approach (e.g. Hansen-Skovmoes & Rosenkvist, 2004; Hornstrup, Tømm & Johansen, 2009) which aims at deliberately conferring project ownership to student-groups. Combining (variations of) the inquiring approach with (variations of) the directive & supportive approach (e.g. Dahl 2008) resulted among students in (1) improved level of (shared) technical and methodological understanding; (2) increased (shared) ownership and self-assurance; (3) more focused and critical knowledge management; and (4) increased certainty of project aims and refined project scope. Facilitators experienced (1) improved certainty of students' level of understanding; (2) initially more time spent but progressively increased time-efficiency; and (3) increased satisfaction from engaging in a more varied (and balanced) role-function.

The success of such improved facilitative approach can be explained based on Vygotsky's theory of developmental zones (Wass & Golding, 2014) and based on Heidegger's claim (Wind, 1974) that facilitative advice must be "ready to hand" as students often fail to implement advice which is "present at hand". In other words, the facilitator's fine tuning of such situated approach is central. Another perspective is that the more inquiring approach helps student-groups progressively develop and sustain project approaches for dealing with uncertainty in more efficient and effective ways.

This process can be described as applying a “dialogic knowing” (Barrett & Moore, 2011); as constructing a “linguaging” (Willert, 2011); or as engaging in a “coordinated management of meaning” (Pearce, 2007). Participating in such enzymatic apprenticeship training of the academic research tradition is essential for high quality study projects (Spliid, 2016).

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